



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

January 27, 2004

OFFICE OF  
SOLID WASTE AND EMERGENCY  
RESPONSE

**MEMORANDUM**

**SUBJECT:** National Remedy Review Board Recommendations for the Barber's Orchard Superfund Site

**FROM:** JoAnn Griffith, Chair  
National Remedy Review Board

**TO:** Winston A. Smith, Director  
Waste Management Division  
EPA Region 4

**Purpose**

The National Remedy Review Board (NRRB) has completed its review of the proposed cleanup action for the Barber's Orchard Superfund Site in North Carolina. This memorandum documents the NRRB's advisory recommendations.

**Context for NRRB Review**

The Administrator announced the NRRB as one of the October 1995 Superfund Administrative Reforms to help control response costs and promote consistent and cost-effective decisions. The NRRB furthers these goals by providing a cross-regional, management-level, "real time" review of high cost proposed response actions prior to their being issued for public comment. The board reviews all proposed cleanup actions that exceed its cost-based review criteria.

The NRRB evaluates the proposed actions for consistency with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and relevant Superfund policy and guidance. It focuses on the nature and complexity of the site; health and environmental risks; the range of alternatives that address site risks; the quality and reasonableness of the cost estimates

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for alternatives; regional, state/tribal, and other stakeholder opinions on the proposed actions, and any other relevant factors.

Generally, the NRRB makes advisory recommendations to the appropriate regional decision maker. The region will then include these recommendations in the administrative record for the site, typically before it issues the proposed cleanup plan for public comment. While the region is expected to give the board's recommendations substantial weight, other important factors, such as subsequent public comment or technical analyses of response options, may influence the final regional decision. The board expects the regional decision maker to respond in writing to its recommendations within a reasonable period of time, noting in particular how the recommendations influenced the proposed cleanup decision, including any effect on the estimated cost of the action. It is important to remember that the NRRB does not change the Agency's current delegations or alter in any way the public's role in site decisions.

## **Overview of the Proposed Action**

The Barber's Orchard site is located in Haywood County, North Carolina, near the town of Waynesville. The former orchard occupies approximately 438 acres and was used to grow apples from 1908 to 1988. Information obtained from a former orchard operator and the North Carolina Department of Agriculture Extension Agent indicated that the following pesticides were used at the site: Captan, dichlorodiphenyltrichloroethane (DDT), lead arsenate, Lorsban/Dursban, Lindane, and Maneb. During the period when apples were produced commercially, it is suspected that long-term application of pesticides and isolated spills occurred. In early 1999, the Haywood County Health Department detected pesticides in a residential groundwater sample. Further sampling confirmed organic pesticide contamination in groundwater and arsenic, lead, and pesticide contamination in soils. The site was proposed for inclusion on the National Priority List (NPL) in the Federal Register on January 1, 2001, and was finalized on the NPL on September 13, 2001.

## **NRRB Advisory Recommendations**

The NRRB reviewed the information package describing this proposal and discussed related issues with site manager Jon Bornholm on December 4, 2003. Based on this review and discussion, the board offers the following comments:

- The Barbers Orchard site apparently was listed on the basis of leaks and spills from mixing, storage, and distribution of pesticides. EPA policy suggests that orchard land areas where agricultural chemicals have been properly applied resulting in soil contamination should not be listed on the NPL. Although this policy does not specifically refer to orchard lands that are parts of NPL sites, other regions have interpreted this policy to suggest that Superfund action generally is not appropriate in areas where agricultural chemicals were properly applied and have determined to not address such land areas. The region's proposal to extend the scope of the remedy beyond the areas immediately impacted by agricultural mixing and distribution activities appears inconsistent with how the policy has been interpreted and implemented nationally. It

could also make it difficult to differentiate between residential areas defined as part of the NPL site and immediately adjacent orchard lands which have been developed and seem to exhibit similar levels of soil contamination. The board recommends that the region provide a clear rationale for expanding the scope of the cleanup beyond the pipeline area into former orchard lands intended for residential development in apparent conflict with the national policy.

- Given the board's concern as expressed in comment # 1 above, the board recommends that as an alternative to cleanup of undeveloped property, the region consider requiring the appropriate level of local government to implement institutional controls. These controls would require the property owners or developers to sample for and remediate arsenic prior to construction on the site.
- The board recognizes that part of this 400-acre site is still an operating orchard and includes other commercial property. The region stated that it does not have any clean-up plans for this portion of the site. The board is concerned that this area may be developed in the future with property owner(s) desiring cleanup at that time. The board recommends that the region include actions to address this issue by, for example, requiring institutional controls restricting residential develop without prior cleanup by the property owners.
- The package as presented appeared to define soil as a principal threat waste. Given that the soil is only marginally contaminated, the board recommends that the region clarify that the principal threat wastes are those associated with the pipeline distribution system, mixing areas, and associated residues.
- The package presented to the board identified several remedial action objectives (RAOs) for soils which do not appear consistent with the proposed cleanup. For example, sediment was identified as part of the RAOs; the soil RAO was related to migration of ground water; and the residual risk levels in the RAOs did not match the cleanup criteria. The board recommends that the RAOs be revised to be consistent with final cleanup criteria and the proposed remedy.
- The five acre grid used in remedial investigation sampling may have led to a significant over-estimate of excavation volume. The board suggests that the region refine the volume estimate, cost estimate and potential disposal cell requirements by characterizing the contaminated area and depth profile for the distribution system area and spray areas separately.
- The board notes that the region is proposing a more costly alternative which includes offsite disposal. The board recommends that the region investigate less costly alternatives, protective of human health and the environment, such as:

- Disposal at a nearby county landfill, after appropriate testing of contaminant mobility in a landfill environment (e.g., to assess concern re arsenic speciation in a reducing environment);
- In-situ treatment with possibly phytoremediation or deep tilling with binders, for undeveloped land; and/or
- Combinations of existing alternatives, leading to minimal off-site disposal.

The board encourages the region to work closely with the state to evaluate these on-site treatment or disposal options.

- The board notes that, based on an exposure point concentration of 36 mg/kg, on average, the levels of arsenic are only marginally elevated. The region informed the board that they may be able to support a cleanup level of 40 mg/kg, based on an estimated 30-year exposure which includes both children and adults, rather than a subchronic 6-year child exposure. The 40 mg/kg cleanup level could significantly lower the volume to be remediated and the associated cost. The board recommends that the region develop cleanup levels based on a 30-year exposure, which is more appropriate for use with chronic toxicity data. However, the board also recommends that the region confirm that using a higher arsenic cleanup level does not result in leaving organic pesticide wastes in place above risk-based levels.
- The board notes that the maximum detected concentration of arsenic was used to assess exposure to subsurface soil. Also, it is unclear to the board whether this sample was taken on-site. The use of a maximum concentration implies that a construction worker would be exposed only to this maximum concentration, resulting in an overly conservative assessment of risk. The region should review the location of the samples used for risk analysis and review the construction worker scenario, in order to determine whether the assumptions used are appropriate.
- The board also notes that arsenic bioavailability was not considered in calculating risks or developing cleanup levels. The board recommends that the region consider whether a higher yet equally protective cleanup level would be worth the expense of in-vivo bioavailability studies. The board also recommends consideration of in-vitro bioavailability studies, which while not as scientifically well-established, can provide an indication of the general bioavailability and can be used to manage the uncertainties in risk and cleanup levels.
- The package presented to the board prior to the meeting discussed risks associated with contaminants other than arsenic and lead and yet only presented soil clean-up criteria for arsenic and lead. At the meeting, the region clarified that the cleanup proposed for arsenic and lead would also address the risks from the other contaminants. If this is the case, the board recommends that the region state so in the decision documents.

### **Follow-Up to NRRB Findings:**

The NRRB appreciates the region's efforts in working together with the potentially responsible parties, state, and community groups at this site. We encourage Region 4 management and staff to work with their regional NRRB representative and the Region 3/4/5/7/8 Support Branch in the Office of Site Remediation and Technology Innovation to discuss any appropriate followup action. We ask that at a minimum, the draft response to the NRRB findings be submitted to the Regional Support Branch when the draft Proposed Plan is submitted for review. We will also post this memorandum on the internet at that time of the issuance of the Proposed Plan. We will work closely with your staff on the appropriate timing of the posting.

Thank you for your support and the support of your managers and staff in preparing for this review. Please call me at 703-603-8774 should you have any questions.

cc: M. Cook (OSRTI)  
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